Advanced Natural Resources

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18507
Prerequisite(s)	Fundamental Natural Resources, Recommended: Introduction to AFNR
Credit	0.5 or 1.0
Program of Study and Sequence	Fundamental Natural Resources – **Advanced Natural Resources** – Capstone experience
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	None
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Natural Resources & Environmental Science Pathway Endorsement; *Agriculture Education
Resources	

Course Description:

Advanced Natural Resources is designed to build upon the basic concepts learned in the Fundamental Natural Resources course. Advanced Natural Resources gives the student a deeper understanding of the decision-making processes that are involved in environmental and natural resource management and conservation, globally, regionally and locally. Students will specifically examine issues related to natural resource use in South Dakota. Topics will include management strategies such as assessing rangeland condition, examining forest site indices, looking at the health of fisheries and wildlife and applying ecological concepts and principles to living organisms in natural resource systems, as related to sustained yield concepts. Students will be expected to understand the importance of soils and their relationship to all ecosystems. Students will be trained to assess air and water quality standards and parameters. Energy and mineral extraction industries will be examined along with looking at determining impacts on the soil, air, and water resources. Classroom and laboratory content may be enhanced by utilizing up-to-date equipment and technology, such as Geographic Information System software to map and inventory resources in real time. Biology, statistics, algebra, English, and human relation skills will be reinforced throughout the course. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences and skills competition such as sales related career development events and proficiency awards. Each student will be expected to maintain a Supervised Agricultural Experience Program/Internship.

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Program of Study Application

Advanced Natural Resources is a second pathway course in the Agriculture, Food and Natural Resources cluster, Natural Resources and Environmental Science Systems pathway. Advanced Natural Resources would follow Fundamental Natural Resources and would prepare a student to participate in a capstone experience.

Course Standards

ANR 1 Explore soil composition and soil management.

Webb Level	*Sub-indicator*	*Integrated Content*
Two Skill/Concept	ANR 1.1 Demonstrate techniques used to classify soils.	
Two Skill/Concept	ANR 1.2 Explain the importance of soil conservation.	
Four Extended Thinking	ANR 1.3 Analyze soils for agricultural and homesite uses.	
Four Extended Thinking	ANR 1.4 Analyze existing soil surveys to develop effective management plans.	

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ANR 2 Apply ecological concepts and principles to rangeland conservation.

Webb Level	***Sub-indicator***	*Integrated Content*
Two Skill/Concept	ANR 2.1 Summarize the interrelationships of rangeland management, the environment, wildlife management, and the livestock industry.	
One Recall	ANR 2.2 Discuss practices used to improve rangeland quality.	
Four Extended Thinking	ANR 2.3 Analyze the carrying capacity in various rangelands for both wildlife species and domestic livestock.	
One Recall	ANR 2.4 Identify plants important to quality rangeland and determine rangeland condition.	

Notes

ANR 3: Understand forest management practices.

Webb Level	*Sub-indicator*	*Integrated Content*
One Recall	ANR 3.1 Identify trees and classify to species.	
Four Extended Thinking	ANR 3.2 Discuss forestry management techniques.	

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ANR 4: Apply ecological concepts and principles to fisheries and wildlife in natural resources.

Webb Level	*Sub-indicator*	*Integrated Content*
Two Skill/Concept	ANR 4.1 Identify similarities and differences among wildlife and fish species.	
Three Strategic Thinking	ANR 4.2 Investigate wildlife management and habitat.	
Three Strategic Thinking	ANR 4.3 Differentiate among a variety of management practices used to manage wildlife populations.	
Four Extended Thinking	ANR 4.4 Enhance fish/wildlife habitat.	

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ANR 5: Understand air and water use, examine management practices, and develop conservation strategies.

Webb Level	*Sub-indicator*	*Integrated Content*
Three Strategic Thinking	ANR 5.1 Explain the government's role in regulating air and water quality.	
One Recall	ANR 5.2 Define appropriate water conservation measures.	
Four Extended Thinking	ANR 5.3 Analyze the way in which water and air management affect the environment and human needs.	
Three Strategic Thinking	ANR 5.4 Measure and assess water and air quality parameters using federal, tribal, state and/or local standards.	

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ANR 6: Develop plans to ensure sustainable production and processing of natural resources. (National NRS.03)

Webb Level	*Sub-indicator*	*Integrated Content*
Three Strategic Thinking	ANR 6.1 Explain methods used to sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.)	
Two Skill/Concept	ANR 6.2 Compare the various production methods of alternative energy sources, both renewable and non-renewable, and their relations to economic, environmental and social sustainability.	
Four Extended Thinking	ANR 6.3 Evaluate methods used to extract and process minerals for economic, environmental, and social sustainability.	

Notes